PATENT
Docket No.: 29287/98

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS :Tomohiro OKADA et al.

SERIAL NO. : 09/354,467

FILING DATE : July 15, 1999

FOR : THIN FILM MAGNETIC HEAD AND MAGNETIC DISK APPARATUS INCLUDING THE SAME

GROUP ART UNIT : 2652

EXAMINER : G. Letscher

ASSISTANT COMMISSIONER FOR
PATENTS AND TRADEMARKS
Washington, D.C. 20231

DECLARATION UNDER 37 CFR 1.132

SIR:

I, Nobuo Yoshida, a citizen of Japan, hereby declare and state:

1. I studied at Hitachi Ibaragi kougyo sennmonn gakkou from 1992 to 1994.

2. I have been employed by Hitachi, Ltd. since 1990. From 1990 to 1991, I was in charge of research and development of a thin film magnetic head at Hitachi, Ltd. In 1994, I joined Hitachi Central Research Laboratory, where I have since been in charge of research and development of thin film magnetic heads.

3. I am familiar with the specification and claims of the above-identified patent application.

4. In view of my education and experience, I consider myself one of ordinary skill in this technology.

5. The independent claims of this application recite the distance between the first and second faces of the plated magnetic layers is 0.2 to 1.5 μm.

6. The claimed distance range of 0.2 to 1.5 μm is critical to achieving the desired results of a high magnetic field intensity centered about the gap layer. As shown in the attached sketch 1, the magnetic field intensity increases as the distance between the first and second faces approaches zero and achieves a highest value at a zero distance. At a distance between 0 to 1.5 μm, the magnetic field intensity achieves acceptably high levels. At a distance between the first and second faces greater than 1.5 μm, the magnetic field intensity drops off significantly, and has unacceptably low values.

7. As shown in the attached Sketch 2A, it was discovered that when the distance between the first and second faces is zero, a first magnetic field distribution is formed centered at the gap layer, as desired, but also that, unexpectedly, a second magnetic field distribution is formed away from the gap (marked as "A" in sketch 2A) such that recording may occur at an undesired location away from the gap.

8. As shown in the attached sketch 2B, it was further discovered that the undesired second magnetic field distribution does not occur when the distance between the first face and the second face is 0.2 μm.

9. Therefore, it is critical that the distance between the first and second faces is 0.2 to 1.5 μm, where the lower end of the range 0.2 μm unexpectedly ensures that magnetic field distribution is centered about the gap layer and prevents the formation of the second magnetic field distribution "A", and the upper end of the range 1.5 μm ensures that the magnetic field intensity has a sufficiently high level.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine and/or imprisonment under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Date: 6 JUNE 2002

Name: Nobuo Yoshida
Nobuo Yoshida